SOV/112-57-5-9697

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1957, Nr 5, p 6 (USSR)

AUTHOR: Sigorskiy, V. P.

TITLE: Fundamental Equations of a Fourpole
(Ob osnovnykh uravneniyakh chetyrekhpolyusnika)

PERIODICAL: Nauch. zap. L'vovsk. politekhn. in-ta, 1955, Nr 27, pp 25-31

ABSTRACT: Fundamental equations in algebraic and matrix forms are presented that describe the parallel, series, and parallel-series connections of two fourpoles. The equations are set up on the basis of currents and voltages on the three sides of the fourpole (3 external circuits) selected as external values. Advantages are cited of the above fundamental equations over other fourpole equations derived from three different initial conditions.
Bibliography: 8 items.

T.A.T.

Card 1/1

SIGORSKIY, Vitaliy Petrovich; SINITSKIY, Lev Aronovich; KARANDEYEV, K.B., professor, redaktor; ZIL'BAN, M.S., redaktor izdatel'stva; SIVACHENKO, Ye.K., tekhnicheskiy redaktor

[Magnitoelectric ratiometers] Magnitoelektricheskie logometry. Pod red. K.B. Karandeeva. Kiev, Izd-vo Akad. nauk USSR, 1956. 196 p. (MLRA 10:5)
(Electric measurements)

SIGORSKIY, V.P.; SINITSKIY, L.A.

Inaccuracy of non-symmetrically circuited logometers due to temperature variations. Izm.tekh. no.2:39-43 Mr-Ap '56. (MIRA 9:7)
(Electric instruments)

USSR/General Section - Metrology. Laboratory Technique. A-6

Abs Jour : Ref Zhur - Fizika, No 4, 1957, 8346

Author : V.P. Sigorskiy
Inst :
Title : Conference on Electrical Measurements and Instrument Construction.

Orig Pub : Izmerit. tekhnika, 1956, No 3, 84-86.

Abstract : Brief abstracts are given of the papers delivered at the conference on electrical measurements and instrument building, held in February 1956 in L'vov (Ukrainian SSR).

Card 1/1

SIGORSKIY, V.P., kandidat tekhnicheskikh nauk.

Conference on electric measurements in Lvov. Elektrichestvo no.5: 94 My '56. (MLRA 9:8)

1. Institut mashinovedeniya i avtomatiki AN USSR.
(Lvov--Electric measurements--Congresses)

SIGORSKIY, V.P.

Conference on electric measurements and instrument making. Priboro-stroenie no.6:31-p.3 of cover Je '56. (MLRA 9:8)
(Electric measurements--Congresses)

SVENSON, A.N. (L'vov); SIGORSKIY, V.P. (L'vov).

Directional-relay radioactive tracer [with English summary in insert]. Avtom.i telem. 17 no.9:828-835 S '56. (MLRA 9:11)
(Radioactive tracers--Industrial applications)

SIGORSKIY, V.P., kandidat tekhnicheskikh nauk.

Conference on electric measurements and instrument manufacturing. (MLRA 9:12)
Vest.elektroprom. 27 no.5:74-76 My '56.

1. Institut mashinovedeniya i avtomatiki Akademii nauk URSR.
(Electric measurements) (Electric instruments)

SOV/112-59-5-9918

9(4)

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 5, pp 212-213 (USSR)

AUTHOR: Sigorskiy, V. P.

TITLE: Methods for Designing Schemes Containing Electron Tubes and Transistors

PERIODICAL: V sb.: Avtomat. kontrol' i izmerit. tekhn. Nr 1. Kiyev, AS UkrSSR, 1957, pp 79-111

ABSTRACT: Principal methods for designing linear electric circuits that comprise electron tubes, transistors, and any other, however complicated, components are set forth. Methods based on nodal voltages and mesh currents are the most general methods suitable for analyzing linear circuits. The condition of the circuit is described by a set of equations that, in the matrix form, looks like

$$P = WQ \quad (1)$$

The multidimensional vectors P and Q and the square matrix W acquire a specific meaning depending on the choice of the coordinate system. In the

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Methods for Designing Schemes Containing Electron Tubes and Transistors

method of nodal voltages, the vector P has initial currents as its components, and the vector Q has the components represented by the nodal voltages referred to a certain node selected as a basis. In this case, the matrix W is an admittance matrix. In the mesh currents method, each mesh is associated with the EMF acting therein and with the mesh current. They are connected by the impedance matrix of the circuit. In the general case, the circuit design can be reduced to solving the equation (1) for the vector

$$Q = W^{-1}P, \tag{2}$$

where W^{-1} is the matrix reciprocal of W

$$W^{-1} = \widetilde{W}/\Delta .$$

Here $\widetilde{W}$ is the adjoint of the matrix W; Δ is the matrix determinant. The method of obtaining the initial vector P and the matrix W is the basic point of the circuit design because these quantities enable one to determine the vector Q

Methods for Designing Schemes Containing Electron Tubes and Transistors

from the formula (2). A method for finding the initial vector and the matrix W for various circuits is set forth. The method consists of the following operations: (1) selecting the coordinate system, i.e., establishing mutually independent nodal pairs or meshes; (2) transforming all energy sources into current or voltage sources depending on the coordinate system selected; (3) segregating all passive twopoles into a separate subcircuit, and writing down the matrix of this subcircuit; (4) transforming the matrix of all multipoles contained in the circuit into a form that would correspond to their positions; (5) finding the circuit matrix by summing up the transformed subcircuit matrices; (6) finding the initial vector P whose each component is equal to the sum of the initial currents flowing into the node in question, or is equal to the sum of the EMFs acting in a given mesh traced clockwise; (7) determining the quantities or relations sought. The above method is illustrated by specific examples.

S.I.S.

Card 3/3

SIGORSKIY, V.P.

32-9-42/43

AUTHOR: None given

TITLE: New Books (Novyye knigi)

PERIODICAL: Zavodskaya Laboratoriya, 1957, Vol. 23, Nr 9, pp.1143-1143 (USSR)

ABSTRACT: The Application of Electron Microscopy. A collection of lectures delivered on the European Congress on the Application of Electron Microscopy. 1957, 166 pages, Roubles 6.40

The Application of the Methods of Spectroscopy in the Food Industry and in Agriculture. Material dealing with the conference held on 4-7 July 1955 at Leningrad. 1957, 254 pages, Roubles 14.-

Kalinin, S.K., Marzuvanov, V.L., Fayn, E.D. Spectral Lines for the Analysis of Mineral Raw Materials. 35 pages, 1957

Sigorskiy, V.P., Sinitskiy, L.A. Magneto-Electric Logometers, 199 pages

Devices for Measuring Electric and Magnetic Quantities. A collection of articles. 19 pages, 1957

Popova, N.M. Phase-Chemical Steel Analysis. 1957, 39 pages

Konokotin, S.G., Grechko, F.M. Semiconductor-Thermo-Telemeasuring Devices. 20 pages, 1957

Card 1/2

28(5); 8(3) PHASE I BOOK EXPLOITATION SOV/1594

Sigorskiy, Vitaliy Petrovich

Metody analiza elektricheskikh skhem s mnogopolyusnymi elementami (Methods of Analyzing Electric Networks With Multipolar Elements) Kiyev, Izd-vo An Ukrainskoy SSR, 1958. 401 p. 5,000 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut mashinovedeniya i avtomatiki.

Resp. Ed.: A.N. Milyakh, Doctor of Technical Sciences; Ed of Publishing House: I. Kisina; Tech. Ed. Ye. Sivachenko.

PURPOSE: This book is intended for electrical engineers. The reading of the book requires training in the theory of electrical and radio engineering at the university level and familiarity with the principles of matrix calculations.

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COVERAGE: The book is devoted to the linear theory of circuits and its application to the analysis of vacuum tubes and transistors. The author discusses the fundamental aspects of present-day methods for analyzing electrical circuits and networks. He describes the equivalent circuit method, the transformation method, the flow graph method, the multiterminal network method, the simple network method, and G. Kron's method, and compares them with the proposed method based on the theory of linear eletrical circuits with multiterminal elements. The author gives recognition to the following persons for their help in compiling this book: Docent S.I. Blazhkevich, Professor Yu. T. Velichko, Doctor of Technical Sciences A.N. Milyakh, I.V. Kisina, Candidate of Technical Sciences L.A. Sinitskiy, A.K. Boyko, Kh.V. Vovk, L.Ya Nagornyi, M.A. Rakov, and Yu. M. Shumkov. There are 323 references, 189 of which are Soviet. Most of the remaining references are English followed by German with 15 references and one or several references in Italian, Czech, Polish, French, Rumanian and Norwegian.

TABLE OF CONTENTS:

Methods of Analyzing Electric Networks (Cont.) SOV/1524

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Methods of Analyzing Electric Networks (Cont.) SOV/1524

AVAILABLE: Library of Congress (TK3226.S493)

JP/rj
6-26-59

Card 10/10

SIGORSKIY, V.P.

105-58-4-5/37

AUTHORS: Sigorskiy, V. P., Candidate of Technical Sciences
Sinitskiy, L. A., Candidate of Technical Sciences

TITLE: Calculating Electric Circuits Containing Rectifiers (Raschet elektricheskikh tsepey s vypryamitelyami)

PERIODICAL: Elektrichestvo, 1958, Nr 4, pp. 26 - 29 (USSR)

ABSTRACT: Until lately the formation and solution of equations for non-linear circuits was carried out separately for every individual case. The results obtained are of special character. Here the authors try to generalize the problems and to obtain formulae characterizing a sufficiently wide class of diagrams with rectifiers. First a circuit with a reactive element is investigated, namely a circuit with a rectifier in form of a fourpole, at the inlet of which an harmonic electromotive force $u_1 = U_m \sin(\omega t + \varphi)$ applies and the only element (in this case the capacity) is connected with the output. It is assumed that the rectifier has a linearly discontinuous characteristic. It is assumed that the current in the rectifiers at the moment $t = 0$ and $t = t_o$ is equal to zero. The

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analysis

SOV/21-58-11-6/28

AUTHORS: Sigorskiy, V.P., Sinitskiy, L.A., and Shumkov, Yu.M.

TITLE: Determining the Switching Moment of a Rectifier in an Electrical Circuit of the n-th Order (Opredeleniye momentov perekluchcheniya vypryamitelya v elektricheskoy skheme n-go poryadka)

PERIODICAL: Dopovidi Akademii nauk Ukrains'koi RSR, 1958, Nr 11, pp 1177-1180 (USSR)

ABSTRACT: A rectifier with linear lumped-parameter characteristics can be substitutei by an equivalent circuit with a switch. Then the circuit of the n-th order with one rectifier can be represented by a four-terminal network. The authors derive equations for determining the moments of switching the rectifier under the following conditions: at the input of the four-terminal network the voltage $u(t)=U_m \sin(\omega t+\varphi)$ is applied, and a simple periodic process operates in the circuit. Theorems on the closing and opening of the switch [Ref. 2] are used in the derivation of these equations. There are: 1 set of block diagrams and 3 Soviet references.

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SOV/21-58-11-6/28

Determining the Switching Moment of a Rectifier in an Electrical Circuit of the n-th Order

ASSOCIATION: Institut mashinovedeniya i avtomatiki AN UkrSSR (Institute of Machine Study and Automation of the AS UkrSSR)

PRESENTED: By Member of the AS UkrSSR, K.K. Khrenov

SUBMITTED: June 24, 1958

NOTE: Russian title and Russian names of individuals and institutions appearing in this article have been used in the transliteration.

Card 2/2

8(3)

AUTHORS: Sigorskiy, V. P., Candidate of Technical Sciences, Sinitskiy, L. A., Candidate of Technical Sciences

SOV/105-59-1-8/29

TITLE: Determining the Direct Current Components of Currents and Voltages in Rectifier Circuits (Opredeleniye postoyannykh sostavlyayushchikh tokov i napryazheniy v tsepyakh s vypryamitelem)

PERIODICAL: Elektrichestvo, 1959, Nr 1, pp 34-35 (USSR)

ABSTRACT: In the former paper (Ref 1) by the authors it was shown that for all circuits with rectifier and reactive element (capacity or inductance) a general system of equations can be set up which determines the moments of transition of the rectifier from one state to another. Here a method is given for determining the D. C. components of currents and voltages in all elements of this class of scheme. The nonlinear circuit is represented in the form of a four-pole. At its input, a sine-shaped e.m.f. is applied; at the output, a reactive element is connected. One determines the D. C. components of the voltage on capacity C or those of the current in inductance L, then the D. C. components of voltages and currents for the individual scheme elements can be obtained. It is shown that

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Determining the Direct Current Components of Currents and Voltages in Rectifier Circuits SOV/105-59-1-8/29

for this it is sufficient to find the D. C. component of the voltage on the capacity or that of the current by the inductance, to set up then formulas (3) and (5) (transformed equations by Kirchhoff (Kirkhgof)) for the circuit in question, and to solve them with regard to the quantities required. The method given here permits to determine the D. C. components of currents and voltages on all elements of a rectifier circuit without being forced to determine and integrate the corresponding instant values on the elements of the circuit. There are 2 figures and 1 Soviet reference.

SUBMITTED: March 24, 1958

Card 2/2

SIGORSKIY, V.P., k.t.n.

Conference on rectifier-containing electric networks.
Izv. vys. ucheb. zav.; radiotekh. 2 no.6:755-757 N-D '59.
(MIRA13:6)
(Electric current rectifiers) (Electric networks)

SOV/115-59-9-35/37

9(2)
AUTHOR: Sigorskiy, V.I.

TITLE: A Conference on Electric Valve Circuits

PERIODICAL: Izmeritel'naya tekhnika, 1959, Nr 9, p 62 (USSR)

ABSTRACT: A conference on electric valve circuits was convened in L'vov in June 1959. The conference was organized by the Institut mashinovedeniya i avtomatiki AN USSR (Institute of Mechanical Engineering and Automation of the AN UkrSSR), in cooperation with the Moskovskiy ordena Lenina elektrotekhnicheskiy institut (Moscow - Order of Lenin - Electrical Engineering Institute) and the L'vovskiy politekhnicheskiy institut (L'vov Polytechnic Institute). The conference participants came from more than 40 scientific research institutes, higher educational institutions, industrial branch institutes, designing offices and leading enterprises in Moscow, Leningrad, Kiyev, L'vov, Novosibirsk, Tomsk, Tashkent, Riga, Gor'kiy and other towns of the USSR. At the conference, 46 papers were read and discussed. These papers dealt with engineering me-

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thods of calculating and designing electrical devices with valve circuits (automation devices, electric measuring instruments, electric energy rectifiers and converters, electronic computers, communication equipment, etc), the development of new valve elements, studies of physical processes in valves, and the perfection of analysis methods for electric valve circuits. The results of using rectifier elements in automatic control devices and measuring instruments were explained in a number of papers. Kh. M. Zhelikhovskiy discussed problems of designing automatic insulation control circuits with the use of rectifiers. Ya.S. Averbukh reported on universal measuring instruments with semiconductor rectifiers developed by the Tochelektropribor plant in Kiyev. P.B. Usatin reported on special circuits of rectifier instruments for measuring the insulation resistance of alternating current networks under voltage. He mentioned the use of rectifier instruments for measuring alternating currents and voltages at frequencies of 0.5-1.5 cps. M.M. Kirillov read a paper on

the use of semiconductor elements in RR automation and remote control devices. V.I. Stafeyev and E.I. Karakushan reported on the magnetic control of diode currents. Magnetic diodes were developed, whose voltages and currents change with the magnetic field. The magnetic diodes may be used in instruments for measuring constant and alternating magnetic fields and in electric signal amplifiers. D.N. Nasledov, N.N. Smirnovaard B.V. Tsarenkov discussed in their paper the prospects of using junction and point contact diodes based on gallium arsenide which have a number of advantages over silicon diodes. N.S. Yakovchuk and I.I. Rodichev described three instruments for testing and measuring the parameters of semiconductor diodes. The importance of rectifier and converter engineering for Soviet economy was emphasized in a resolution passed by the conference participants. They showed deficiencies in the coordination of scientific research work and in the exchange of information. The editors of "Izmeritel'naya tekhnika" and other periodicals were asked to publish more informa-

tion on electric valve circuits. The conference participants agreed on the necessity of introducing into the Soviet economy such important developments as those connected with problems of long distance transmission of dc power, industrial electronic devices for the automation of production processes, electrification and automation of RR transport, etc.

8 (5)

AUTHOR: Sigorskiy, V. P., Candidate of Technical Sciences

SOV/105-59-11-29/32

TITLE: Conference on Electric Current Circuits With Valves

PERIODICAL: Elektrichestvo, 1959, Nr 11, pp 92-94 (USSR)

ABSTRACT: This Conference which was organized by the Institut mashinovedeniya i avtomatiki AN USSR (Institute of Machine Construction and Automatic Control of the AS UkrSSR) together with the Moskovskiy ordena Lenina energeticheskiy institut (Moscow Order of Lenin Institute of Power Engineering) and the L'vovskiy politekhnicheskiy institut (L'vov Polytechnic Institute) took place in L'vov from June 23 to 26, 1959. In their lectures L. R. Neyman, Corresponding Member of the AS USSR, S. R. Glinternik, Candidate of Technical Sciences, A. V. Yemel'yanov, Candidate of Technical Sciences, and V. G. Novitskiy dealt with the operational safety of high-capacity ionic transformers. The gas tubes developed in the energeticheskaya laboratoriya im. M. A. Shatelena ENIN AN SSSR (Power Laboratory imeni M. A. Shatelen of the ENIN AS USSR) were described. I. L. Kaganov, Doctor of Technical Sciences, dealt with the valve effect of semiconductor diodes and

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-triodes. G. Ye. Pukhov, Doctor of Technical Sciences, spoke on iteration methods in calculating periodic processes in electric current circuits. L. L. Ivanov reported on the theory of the discontinuous functions and their application in the calculation of nonlinear electric current circuits. B. M. Shlyaposhnikov, Doctor of Technical Sciences, analysed the difference between the parameters of linear and nonlinear elements. In his lecture V. P. Sigorskiy dealt with the method of tuning (pripasovyvaniye) for the analysis of nonlinear current circuits. L. A. Sinitskiy dealt with the determination of the character of periodic modes of working in current circuits. Yu. M. Shumkov spoke on the approximation of the semiconductor-rectifier characteristics. V. M. Bondarenko suggested a simple method for determining the harmonic current components in nonlinear current circuits. S. R. Glinternik, Candidate of Technical Sciences, gave a description of electromagnetic processes in ionic transformers. B. P. Terent'yev, Doctor of Technical Sciences, pointed to shortcomings in electronic pulse control of ionic rectifiers. A. M. Bamdas, Doctor of Technical Sciences, and A. P. Kuz'min reported on multistage three-phase rectifiers. S. V. Strakhov, Doctor of

Technical Sciences, gave an analysis of the electromechanic transients in the system diesel motor - synchronous generator - induction motor for the case that rectifiers are connected to the compound- and excitation current circuit of the synchronous generator. V. Z. Yarinyy reported on the theoretical and experimental investigations on a valve contact cascade for speed control. V. I. Gol'dgefter and L. Ya. Mizyuk, Candidate of Technical Sciences, spoke on the establishment of a parametric filter. P. B. Usatin spoke on a current rectifier instrument for the insulation measurements of alternating-current network. Zh. I. Alferov reported on the development of silicon diodes with negative resistance. V. I. Stafeyev and E. I. Karakushan presented results on the development of magnetic diodes. D. N. Nasledov, N. N. Smirnova and B. V. Tsarenkov dealt with the application of plane and point-contact diodes on the basis of gallium arsenide. O. A. Kossov investigated the establishment of control rectifiers for semiconductor instruments. P. I. Dekhterenko demonstrated the convenient application of a controlled synchronous detector

PHASE I BOOK EXPLOITATION SOV/4967

Sigorskiy, Vitaliy Petrovich

Analiz elektronnykh skhem (Analysis of Electronic Circuits) Kiyev, Gostekhizdat, 1960. 176 p. 10,200 copies printed.

Ed.: L. Polyanskaya; Tech. Ed.: S. Shafeta.

PURPOSE: This book is intended for technical personnel in general and can also be used by lecturers and students in advanced courses of radio and electrical engineering.

COVERAGE: The book presents in a popular form the fundamentals of the theory of electric networks and the modern methods of circuit designing for electron tubes and transistors. Analytical methods are illustrated by examples drawn from designs of amplifiers, oscillators, computer components, and other electron devices. No personalities are mentioned. There are 19 references, all Soviet (including 1 translation).

Card 1/4

KARANDEYEV, Konstantin Borisovich [Karandieiev, K.B.]; SHTAMBERGER, Genrikh Abramovich [Shtamberger, H.A.]; SIGORSKIY, V.P. [Sihors'kyi, V.P.], kand.tekhn.nauk, otv.red.; SHTUL'MAN, I.F., red.izd-va; KADASHEVICH, O.O., tekhn.red.

[Quasi-balanced a.c.bridges] Kvazizrivnovazheni mosty zminnoho strumu. Kyiv, Vyd-vo Akad.nauk URSR, 1960. 184 p. (MIRA 13:7)
(Bridge circuits)

81110
S/142/60/000/01/002/022
E140/E463

9,3200

AUTHOR: Sigorskiy, V.P.

TITLE: Generalized Methods of Electric Circuit Analysis

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika, 1960, Nr 1, pp 13-29 (USSR)

ABSTRACT: The author distinguishes two groups of methods for the analysis of electric circuits, one based on the substitution of vacuum tubes and semiconductors by their equivalent circuits while the second group of methods is based on the separation of a complex circuit into simpler multi-terminal sub-circuits. The author first reviews briefly work in the first class of methods (Ref 1 to 8). Further, he discusses topological methods, new ideal elements - gyrator, ideal power transformers (Ref 9 to 15). The principal defect of these methods, in the opinion of the author, is the necessity of first transforming the circuit and also the presence in the equivalent circuits of dependent sources. He then reviews methods based on the theory of multi-terminal networks and the method of sub-circuits (Ref 16 to 24). The principal defect of methods of the second group is the

Generalized Methods of Electric Circuit Analysis

necessity of first dividing the circuit into simple sub-circuits. In addition, the matrix vector parameters of the circuit are defined in terms of complicated algebraic operations on the matrices and vectors of the component sub-circuits. Following that, he very briefly dismisses Kron's tensor method (Ref 25,26). No concrete criticism is given but it is pointed out that the method has not been as yet accepted in general technical literature. The author then describes the "generalized methods" of electric circuit analysis. These methods are claimed to result from the author's own work in 1951 to 1954 from an attempt to apply the previously known methods of mesh currents and node voltages to electronic circuits (Ref 27 to 31). Similar attempts were made "almost simultaneously" outside the Soviet Union (Ref 32-35). The author points out that in distinction to passive and active two-terminal networks vacuum tubes and transistors are multi-terminal elements. They are not included in the existing division of elements into active and passive. While they appear

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Generalized Methods of Electric Circuit Analysis

in electric circuits as sources of energy-active elements - this property depends on the voltages and currents applied to their terminals. They are termed controlled elements. In the classification of Zeliakh passive and controlled elements are non-autonomous multi-terminal networks while systems with independent sources are autonomous, (Ref 22). The author then describes the method of writing the equations for the generalized method. This method is indistinguishable from that of Bode (1945). Bode's work itself is cited only in connection with a particular determinantal equation - Eq (11). The author claims the following features for the generalized method: 1) it is based on the actual circuit and not an equivalent circuit; 2) the matrix is written directly from inspection of the actual circuit by very simple rules; 3) the calculations are carried out in the very compact notation of determinantal algebra; 4) groups of circuits may be analysed in general form using the determinantal equations; 5) entire classes of problems may be treated in this manner; 6) methods of

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Generalized Methods of Electric Circuit Analysis

conformal mapping may be used for the graphical study of network properties; this is convenient for high frequencies where the vacuum tube and transistor characteristics are complex quantities. An implicit assumption of the method, nowhere stated by the author, is that the vacuum tube and transistor parameters are idealized linear quantities. The method as presented does not take into account the actual non-linear characteristics of these elements. In the review of prior art, W.Cauer is completely neglected. There are 6 figures and 55 references, 36 of which are Soviet, 8 English, 1 Ukrainian, 2 German, 1 Italian, 7 Czech.

SUBMITTED: July 16, 1959

X

Recommended - Inst. Automatics and Electrometrics, Siberian Dept AS USSR

Card 4/4

KARANDEYEV, K.B., otv. red.; SIGORSKIY, V.P., doktor tekhn. nauk, red.; TSAPENKO, M.P., kand. tekhn. nauk, red.; DREMOVA, T.A., red.; VYALYKH, A.M., tekhn. red.

[Works of the Conference on Automatic Control and Electric Measurements] Trudy Konferentsii po avtomaticheskomu kontroliu i metodam elektricheskikh izmerenii, Novosibirsk, 1959. Novosibirsk, Izd-vo Sibirskogo otd-niia AN SSSR, 1961. 409 p. (MIRA 14:11)

1. Konferentsiya po avtomaticheskomu kontrolyu i metodam elektricheskikh izmereniy, Novosibirsk, 1959. 2.Chlen-korrespondent AN SSSR (for Karandeyev).

(Automatic control) (Electric measurements)

SIGORSKIY, Vitaliy Petrovich, doktor tekhn. nauk; TROKHIMENKO, Ya.K., kand. tekhn.nauk, retsenzent; POLYANSKAYA, L.O., insh., red. izd-va; MATUSEVICH, S.M., tekhn. red.

[Analysis of electronic circuits] Analiz elektronnykh skhem. Izd.2., ispr. i dop. Kiev, Gostekhizdat USSR, 1963. 198 p. (MIRA 16:5)

(Electronic circuits)

SIGORSKIY, V. P.

Analysis of electronic networks by means of multiterminal subnetworks. Trudy Inst. avtom. i elektrometr. SO AN SSSR no.7:5-20 '64. (MIRA 18:1)

L 41184-65

ACCESSION NR: AP4044343 S/0286/64/000/013/0081/0081

AUTHOR: Vishnevskiy, A. P.; Krichevskaya, V. L.; Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

TITLE: An accumulating impulse counter. Class 42, No. 163810

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 13, 1964, 81

TOPIC TAGS: impulse counter, capacitance, spectrotron

ABSTRACT: This Author Certificate presents a capacitive accumulating impulse counter (see Fig. 1 of the Enclosure), utilizing a spectrotron as an element for fixing the position of the circuit. This feature enlarges the frequency range of the impulse count and maintains sustained stability in counting infrequent and random impulses. Orig. art. has: 1 figure.

ASSOCIATION: Institut matematiki i vychislitel'nykh tsentr Sibirskogo otdeleniya AN SSSR (Institute of Mathematics and Computer Center, Siberian Division, AN SSSR)

SUBMITTED: 20Mar63 ENCL: 01

SUB CODE: EC NO REF SOV: 000 OTHER: 000

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L 41184-65
ACCESSION NR: AP4044343

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ENCLOSURE: 01

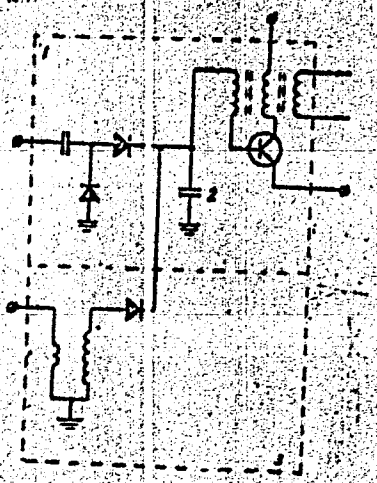

Fig. 1. 1- counter; 2- capacitance; 3- spectrotron.

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L 4263-65
ACCESSION NR: AP5008392 S/0108/64/019/012/0003/0016

AUTHOR: Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

TITLE: General principles for materialization and application of multistable elements

SOURCE: Radiotekhnika, v. 19, no. 12, 1964, 3-16

TOPIC TAGS: multistable element

ABSTRACT: The principles of operation and chief characteristics are considered of these multistable elements: frequency-harmonic type, nonautonomous frequency-harmonic, pulse-duration, and pulse-phase. The multistable elements are likely to be used in nonbinary scalers, digital-analog and analog-digital converters, d-c voltage quantizers and storages, decimal computers. These characteristic features of the multistable elements are noted: (1) The number of stable states is independent of the circuit complexity and is determined only by its

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L 49263-65
ACCESSION NR: AP5008392

mode of operation and component characteristics; (2) Dynamic features of the stable states (such as frequency of harmonic oscillations, duration or phase of a periodic pulse train) do not depend on the multistable element but rather on the external master sources and, hence, are independent of circuit parameters in a fairly wide range; (3) The availability of the various dynamic stable-state features not only permits their use for presentation of numbers but also opens up the possibility for developing a special logic for every feature. Orig. art. has: 15 figures and 8 formulas.

ASSOCIATION: none

SUBMITTED: 09Jun64 ENCL: 00 SUB CODE: EC

NO REF SOV: 004 OTHER: 001

Card 2/2

L 21089-65 EWT(l)/ESC(b)-2/ESD-3/EWA(h) Pab LSD(a)-5/AFWL(p)/AFETR/AFTC(b)/RAEM(d)/RAEM(l)/ESD(c)/ESD(dp)

ACCESSION NR: AP5001988 S/0020/64/159/006/1280/1283

AUTHOR: Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

TITLE: Synthesis of elements with many stable states on the basis of a nonlinear two-port with nonmonotonic response curve

SOURCE: AN SSSR. Doklady, v. 159, no. 6, 1964, 1280-1283

TOPIC TAGS: network synthesis, circuit theory, computer component, multiple state circuit

ABSTRACT: The author first shows qualitatively that the system shown in Fig. 1 of the enclosure and consisting of a nonlinear two-port (φ) and a linear feedback network (β), will have a stable state whenever the plot of the nonlinear two-port crosses the feedback line with a slope smaller than the slope of the line. Since elements with many (more than 2) stable states would be quite useful for computer memory applications, but simple nonlinear two-port networks with sawtooth-like or staircase-like characteristics (which would provide the required crossing of the feedback line) are not readily available, the author outlines briefly a meth-

Card 1/4

L 21089-65

ACCESSION NR: AP5001988

od of synthesizing such a network. An example of such a system, with its block and schematic diagrams and amplitude characteristic, is shown in Fig. 2. The most important advantage of this approach, over the customary method of cascading binary units, is that the number of stable states can be increased within a certain range without the use of additional equipment. Orig. art. has: 3 figures and 3 formulas.

ASSOCIATION: Institut matematiki Sibirskogo otdeleniya Akademii nauk SSSR (Institute of Mathematics, Siberian Branch, Academy of Sciences, SSSR)

SUBMITTED: 10May64 ENCL: 02

SUB CODE: EC, DP NR REF SOV: 001 OTHER: 000

Card 2/4

L 21089-65
ACCESSION NR: AP5001988

ENCLOSURE: 01

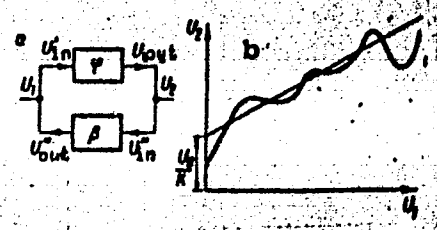


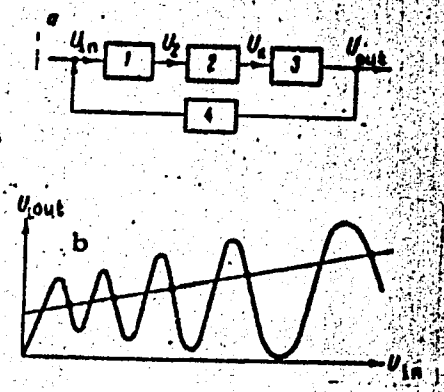
Fig. 1. a - general block diagram of element with many stable states based a nonlinear two-port; b - graphic solution of the system of equations describing the block diagram.

Card 3/4

L 21089-65

ACCESSION NR: AP5001988

ENCLOSURE: 02



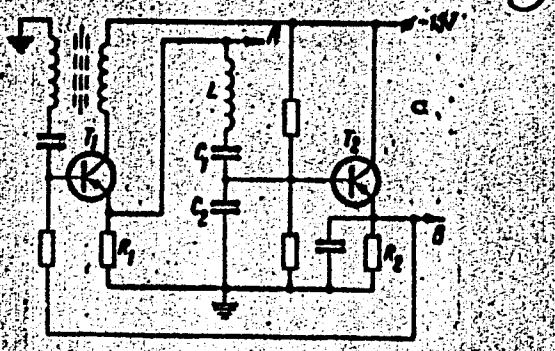


Fig. 3. System with several stable states: a - block diagram, b - amplitude characteristic, 3- schematic diagram

Card 4/4

L 42028-65 EWT(l)/EEC(b)-2/EWA(h) Pm-4 /Pn-4/Pac-4/Pi-4/Peb/Pj-4 JM

UR/0286/65/000/007/0130/0131

ACCESSION NR: AP5010946

AUTHORS: Sigorskiy, V. P.; Fomin, K. O.; Sitnikov, L. S.; Utyakov, L. L. 40 B

TITLE: Multistable unit. Class 42, No. 169876

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 130-131

TOPIC TAGS: klystron 15

ABSTRACT: This Author Certificate presents a multistable unit. To increase the response rate with amplitude state indication, it is made of a reflex klystron whose cavity is connected through a pickup loop to a rectifier head (see Fig. 1 on the Enclosure). The rectifier head is connected to a wide-band matching two-terminal pair network whose output is connected between the repeller plate and cathode of the klystron. Orig. art. has: 1 diagram.

ASSOCIATION: none

SUBMITTED: 14Jan63 ENCL: 01 SUB CODE: EC

NO REF SOV: 000 OTHER: 000

Card 1/2

L 42028-65

ACCESSION NR: AP5010946

ENCLOSURE: 01

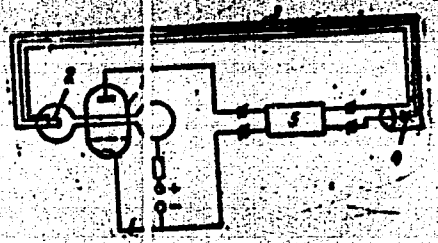


Fig. 1. Multistable unit. 1 - reflex klystron; 2 - pickup loop; 3 - cable; 4 - rectifier head; 5 - matching two-terminal pair network

Card 2/2

L 42042-65 EWT(1)/EWA(h) Peb

ACCESSION NR: AP5010948 UR/0286/65/000/007/0131/0132

AUTHOR: Boyko, A. N.; Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L. 16 B

TITLE: Reversible counter. Class 42, No. 169879

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 131-132

TOPIC TAGS: reversible counter, counter, pulse counter

ABSTRACT: The proposed reversible counter utilizes a high-stability pulse-phase element. To improve stability, the counter is constructed as shown in Fig. 1 of Enclosure. Orig. art. has: 1 figure. [DW]

ASSOCIATION: Institut matematiki SO AN SSSR (Institute of Mathematics, SO AN SSSR)

SUBMITTED: 04Jun64 ENCL: 01 SUB CODE: EC

NO REF SOV: 000 OTHER: 000 ATD PRESS: 3239

Card 1/2

L 42042-65

ACCESSION NR: AP5010948

ENCLOSURE: 01

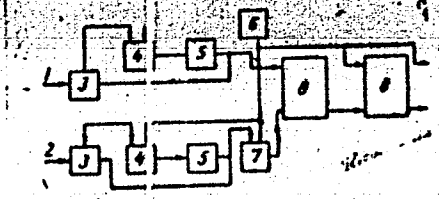


Fig. 1. Reversible counter

1 - Direct-count pulse source; 2 - reverse-count pulse source; 3 - trigger; 4 - AND gate; 5 - shaper; 6 - generator of high-repetition pulses; 7 - anticoincidence circuit; 8 - high-stability pulse-phase element.

Card 2/2

L 42030-65 EWT(1)/EWA(h) Peb

ACCESSION NR: AP5010956 UR/0286/65/000/007/0134/0134

AUTHORS: Boyko, A. N.; Gorodetskiy, V. V.; Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L. 13 B

TITLE: Summator. 15 Class 42, No. 169887

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 134

TOPIC TAGS: summator

ABSTRACT: This Author Certificate presents a summator containing chronotrons, logic "AND" and "OR" circuits, and a transfer shaper circuit. To sum numbers the digital orders of which are represented in the time-pulse form with an arbitrary numerical base, the chronotron storing the digital order of the first term is connected to the chronotron storing the second term and also to the "OR" circuit summing the length of the first term with the unit transfer length (see Fig. 1 on the Enclosure). The output of the "OR" circuit is connected to the "OR" circuit summing the length of the terms and transfer and to the "AND" circuit separating the difference of the sum and the numerical base. The latter two circuits are also connected to the output of the chronotron storing the second term. The output of the circuit summing the length of the terms and transfer is connected to the logic transfer shaper circuit and to the decoupling "OR" circuit whose second input is connected to the "AND"

Card 1/2

L 42030-65

ACCESSION NR: AP5010956

circuit. The output of the "OR" circuit is connected to the chronotron storing the sum. Orig. art. has: 1 diagram.

ASSOCIATION: none

SUBMITTED: 14Jan63 ENCL: 01 SUB CODE: DP

NO REF SOV: 000 OTHER: 000

Card 2/3

L 42035-65 EWT(1)/EWA(h) Peb

ACCESSION NR: AP5010960 UR/0286/65/000/007/0136/0136

AUTHORS: Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

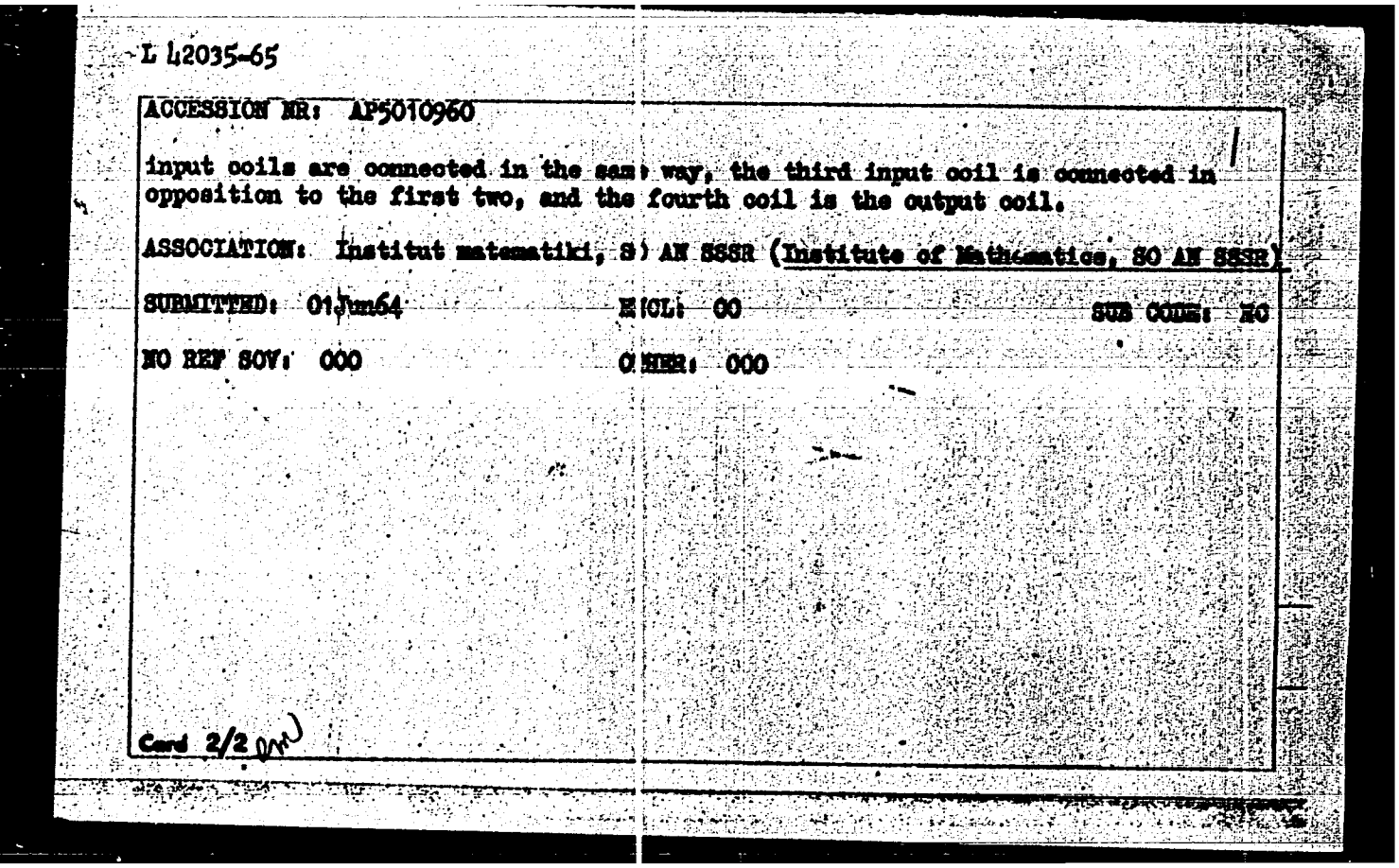
TITLE: Pulse counter with variable scaling factor. Class 42, No. 169893

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 7, 1965, 136

TOPIC TAGS: pulse counter

ABSTRACT: This Author Certificate presents a pulse counter with a variable scaling factor, which contains a multistable unit, its triggering circuit, and a selection circuit. To obtain a variable scaling factor with presetting of the instant of the scaling change and of the initial phase while using a phase-pulse multistable unit, the output of the multistable unit is connected to the first input of the phase selection circuit. The second input of the phase selection circuit is connected to the source of pulses determining the instant of the scaling factor change. The third input is connected to the source of pulses setting the initial phase. The output of the phase selection circuit is connected to the recording input of the multistable element of a given stage and to the counter input of the unit of the following stage. To simplify the counter, the phase selection circuit is made of a core with a rectangular hysteresis loop. The core has four coils; the first two

Card 1/2



L 42035-65

ACCESSION NR: AP5010960

input coils are connected in the same way, the third input coil is connected in opposition to the first two, and the fourth coil is the output coil.

ASSOCIATION: Institut matematiki, SO AN SSSR (Institute of Mathematics, SO AN SSSR)

SUBMITTED: 01Jun64 ENCL: 00 SUB CODE: EC

NO REF SOV: 000 OTHER: 000

Card 2/2

L 54551-65 EWT(d)/EED-2/EWP(1) Pq-4/Pg-4/Pk-4 IJP(c) BB/GG
ACCESSION NR: AP5015526 UR/0286/65/000/008/0065/0065

AUTHORS: Sigorskiy, V. P.; Sitnikov, L. S; Utyakov, L. L.

TITLE: Pulse counter modulo n. Class 42, No. 170205

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 8, 1965, 65

TOPIC TAGS: pulse counter

ABSTRACT: This Author Certificate presents a pulse counter modulo n containing a multistable unit and a shift circuit. To simplify the device (using a phase-pulse multistable unit with two inputs), the counter input of each multistable unit is connected to the output of a coincidence circuit (see Fig. 1 on the Enclosure). The clock pulse inputs of all the units are connected to a clock pulse generator. The unit outputs are connected to the first input of the coincidence circuit, whose second inputs are connected to the inputs of a reference multistable unit. The coincidence circuit outputs are also connected to the input for resetting the unit to its initial state. The first multistable unit has a scaling coefficient equal to n, and that of the following units is equal to n + 1. Orig. art. has: 1 diagram.

ASSOCIATION: Institut matematiki, SO AN SSSR (Institute of Mathematics, SO AN SSSR)

Card 1/2 Submitted: 17 Feb 64

L 54549-65 EWT(d)/EED-2/EWP(1) Pq-4/Pg-4/Pk-4 IJP(c) BB/GG
ACCESSION NR: AP5015527 UR/0286/65/000/008/0066/0066

AUTHORS: Piskunov, S. V.; Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

TITLE: Summator with pulse width representation of numbers. Class 42, No. 170208

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 8, 1965, 66

TOPIC TAGS: summator

ABSTRACT: This Author Certificate presents a summator with pulse width representation of numbers, containing multistable time-pulse units. One unit is connected through an "OR" circuit, which is connected to the transfer output of the preceding summator digit, to the first inputs of a second "OR" circuit and an "AND" circuit, whose second inputs are connected to the other unit (see Fig. 1 on the Enclosure). There are also a third "OR" circuit forming the sum modulo ten and a transfer pulse shaper section. To utilize high stability chronotrons, a shaping circuit is connected between the second and third "OR" circuits. The supply inputs of the multistable time-pulse units are connected to sources of forward and additional reference voltages. Orig. art. has: 1 diagram.

ASSOCIATION: Institut matematiki, SO AN SSSR (Institute of Mathematics, SO AN SSSR)

Card 1/2

L 54545-65 EWT(d)/EED-2/EWP(1) Pq-4/Pg-4/Pk-4 IJP(c) BB/GG

ACCESSION NR: AP5015531 UR/0286/65/000/008/0067/0067

AUTHORS: Vishnevskiy, A. P.; Koyfman, A. A.; Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

TITLE: Decimal storage summator. Class 42, No. 170212

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 8, 1965, 67

TOPIC TAGS: summator, storage device

ABSTRACT: This Author Certificate presents a decimal storage summator containing triggers, switches, and "OR" circuits. To construct the summator of a phase-pulse unit and to decrease its cost, an "OR" circuit (connected to a source of zero reference pulses and to a pulse number detector) is connected to the dynamic input of the phase-pulse unit. The zero trigger input of a phase-to-pulse number converter is connected to the second term pulse source and the one input is connected to the zero reference pulse source. The trigger output is connected to one of the inputs of a coincidence circuit, whose other two inputs are connected to the summation solution output and to a source of clock pulses shifted by half of the high cycle. The coincidence circuit output is connected to one of the inputs of an "OR" circuit, whose other two inputs are connected to the clock pulse source

Card 1/2

L 54545-65
ACCESSION NR: AP5015531

and to the output of the transfer circuit of the preceding digit. The output of the "OR" circuit is connected to the counter input of the phase-pulse unit, whose first output is connected to the zero input of the transfer circuit trigger. The one input of the trigger is connected to a source of pulses shifted by half the period of the clock pulses relative to the zero reference pulses. The trigger output is connected to the first input of an "AND" circuit, whose second input is connected to the second output of the phase-pulse unit.

ASSOCIATION: Institut matematiki, SO AN SSSR (Institute of Mathematics, SO AN SSSR)

SUBMITTED: 10Mar64 ENCL: 00 SUB CODE: DP, EC

NO REF SOV: 000 OTHER: 000

Card 2/2

L 51414-65 EWT(d)/EED-2/EWP(1) Pq-4/Pg-4/Pk-4 IJP(c) BB/GG
ACCESSION NR: AP5015523 UR/0286/65/000/008/0064/0064
681.14

37
36
B

AUTHOR: Boyko, A. N.; Sitnikov, L. S.; Sigorskiy, V. P.; Utyakov, L. L.

TITLE: An adder. Class 42, No. 170202

160

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 8, 1965, 64

TOPIC TAGS: logic, circuit, adder, computer

ABSTRACT: This Author's Certificate introduces an adder which contains a chronotron, pulse shift logic circuits, flip-flops, "AND" or "OR" logical elements. The device is designed for improving the reliability of adders with pulse-time number representation. The first logical shift circuit is connected to the chronotron where the first addend is stored and to the first input of the second logical shift circuit, The first input of the first logical shift circuit is connected to a source which supplies a sequence of short trigger pulses. The second input of the first logical shift circuit is connected to the carry output for the preceding digit. The second input of the second logical shift circuit is connected to the chronotron where the first addend is stored, while the output of this circuit is

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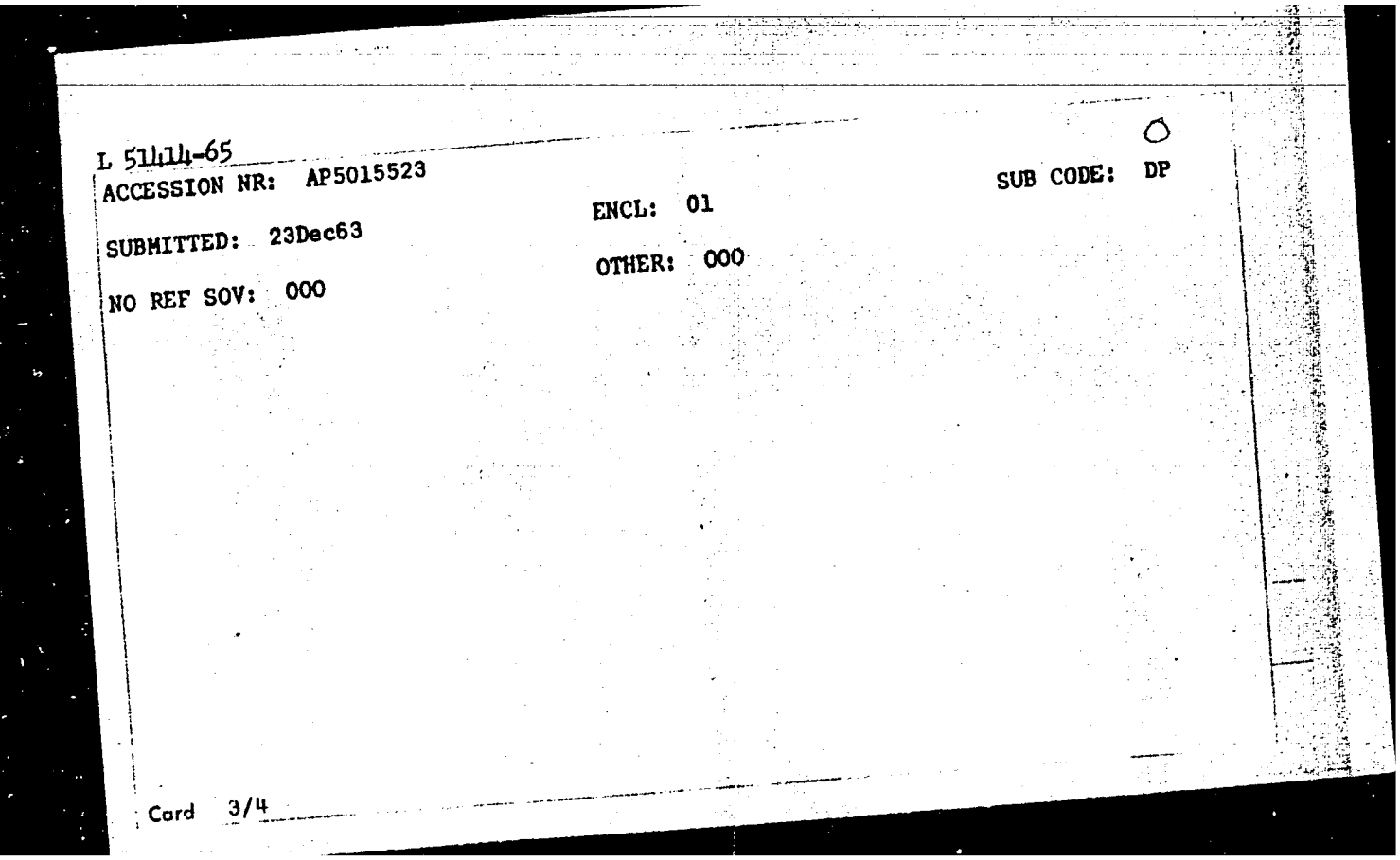
L 51414-65
ACCESSION NR: AP5015523

connected to the first input of the third logical shift circuit. The second input of the third logical shift circuit is connected to the chronotron where the second addend is stored, the output of the third circuit is connected to the unit input of the first flip-flop for storage of the sum, and the neutral input of this circuit is connected to the source of short trigger pulses. The chronotrons for storage of the first and second addends are connected to the first and second inputs of the "OR" gate respectively. The output of the "OR" gate is connected to the first input of the first "AND" gate. The second input of the "AND" gate is connected to a source of short pulses which are shifted with respect to the pedestal pulse sequence by an interval which corresponds to some number greater than the base of the number system minus 1 and less than the base of the number system. The output of the first "AND" gate is connected to the unit input of the first flip-flop. The neutral input of this flip-flop is connected to a source of pulses which are shifted by half a period. The flip-flop output is connected to the first input of the "AND" gate which forms the carry. The second input of this gate is connected to a source of unit duration pulses. The phase of these pulses coincides with the phase of the pedestal pulse sequence.

ASSOCIATION: Institut matematiki SO AN SSSR (Institute of Mathematics, SO AN SSSR)

Card 2/4



L 51414-65

ACCESSION NR: AP5015523

SUB CODE: DP

SUBMITTED: 23Dec63

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NO REF SOV: 000

OTHER: 000

Card 3/4

L 51414-65
ACCESSION NR: AP5015523

ENCLOSURE: 01

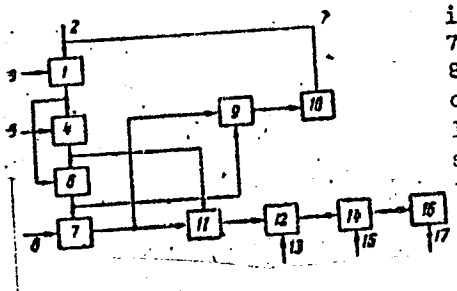

Fig. 1. 1--logical shift circuit; 2--short trigger pulse sequence; 3--carry for previous digital place; 4--chronotron where the first addend is stored; 5--input for the first addend; 6--logical shift circuit; 7--chronotron where the second addend is stored; 8--input for the second addend; 9--logical shift circuit; 10--sum flip-flop; 11--logical "OR" gate; 12--logical "AND" gate; 13--sequence of pulses which are shifted with respect to the pedestal pulses by an interval greater than $R-1$ and less than R, where R is the base of the number system; 14--flip-flop; 15--pulses for return to the initial state which are shifted by half a period with respect to the pedestal pulses; 16--"AND" gate; 17--pulse of unit duration

Card 4/4

L 51508-65 EWT(d)/EEC(f)/BXT/EED-2/EWP(1) Pq-4/Pg-4/Pk-4 IJP(c) BB/GG
ACCESSION NR: AP5015339 UR/0286/65/000/009/0092/0092
681.142 65

40
B

AUTHOR: Vishnevskiy, A. P.; Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

TITLE: A method for recording and retrieval of information in an N-valued memory. Class 42, No. 170755

16

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 92

TOPIC TAGS: information storage, computer memory, frequency spectrum, line spectrum

ABSTRACT: This Author's Certificate introduces a method for recording and retrieval of information in an N-valued matrix type spectrotron memory. The method makes use of selected spectrotrons only. In the initial state, the first phase supply voltage is fed to all vertical busses. This voltage has a frequency line spectrum with harmonic phases which are shifted by 120° with respect to the corresponding harmonics of the second phase supply spectrum. The second phase voltage is fed to all horizontal busses. During information recording, a supply spectrum with harmonic

Card 1/2

L 51508-65

ACCESSION NR: AP5015339

0

phases shifted by 120° with respect to the supply spectra fed to all busses in the initial state is first fed to the horizontal and vertical busses which intersect at the chosen memory element. The horizontal bus is then disconnected from the supply voltage, and the first or third phase of the i-harmonic with frequency which corresponds to the voltage information being recorded is fed to the vertical bus. After the spectrotron circuit is tuned to this frequence, there is a transition to the initial state. The spectrotron then remains tuned to the i-harmonic frequency. In reading out the information from the spectrotron, a voltage with an am frequency spectrum is first fed to the horizontal bus which is connected to the chosen spectrotron, and the vertical bus is connected to the readout amplifier. The output circuits of the readout amplifier are tuned to the upper side frequencies of the am spectrum. The device is then returned to the initial state.

ASSOCIATION: none

SUBMITTED: 14Jan63

NO REF SOV: 000

ENCL: 00

SUB CODE: DP

OTHER: 000

Card 2/2

[illegible]ROKIY, Vitaliy Petrovich; [illegible]OV, [illegible] Semenovich,
[illegible]KOV, Lev [illegible]; [illegible], [illegible], red.

[Networks with multiple steady-states] Skhemy s mnogimi ustoichivymi sostoianiiami. Novosibirsk, Red.-izd. otdel [illegible] otd-nia AN SSSR, 1965. [illegible] p. (MIRA 18:11)

L 7039-66 EWT(d)/EWP(1) IJP(c) BB/GG

ACC NR: AP5026810 SOURCE CODE: UR/0286/65/000/017/0092/0092

AUTHOR: Sigorskiy, V. P.; Sitnikov, L. S.; Utyakov, L. L.

ORG: none

TITLE: A parallel cumulative decimal summation unit. Class 42, No. 174439 [announced by Institute of Mathematics, Siberian Department, AN SSSR (Institut matematiki Sibirskogo otdeleniya AN SSSR)]

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 17, 1965, 92

TOPIC TAGS: arithmetic unit, computer component, flip flop circuit, coincidence circuit, adder

ABSTRACT: This Author's Certificate introduces a parallel cumulative decimal summation unit which contains multistable pulse-position elements, "OR" gates, flip-flops and coincidence circuits. The circuitry of the device is simplified by connecting the input of the multistable pulse-position cell for each digit through an "OR" gate to the output of the coincidence circuit for the preceding digit, and to the output of the dynamic flip-flop for the given digit. The set terminal of this flip-flop is connected to the addend pulse source, the reset terminal is connected to the pedestal pulse train source, and the cadence pulse input is connected to the cadence pulse source..

UDC: 681.142.07

Card 1/2

L 7039-66

ACC NR: AP5026810

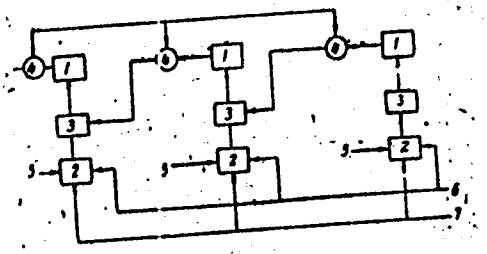

Fig. 1. 1--multistable pulse-position cell; 2--dynamic flip-flop; 3--"OR" gate; 4--nonsimultaneous coincidence circuit; 5--addend pulse input; 6--cadence pulse input; 7--pedestal pulse train input

SUB CODE: DP,EC/ SUBM DATE: 03Aug64/ ORIG REF: 000/ OTH REF: 000

Card 2/2

SIGORSKIY, V.P.

Construction of an oriented graph of an electronic circuit. Izv.vys.ucheb.zav.; radiotekh. 8 no.5:614-616 S-O '65. (MIRA 18:12)

1. Submitted March 1, 1965.

MOLCHANOV, A.A. (Novosibirsk); SIGORSKIY, V.P. (Novosibirsk); FOMEL', B.M. (Novosibirsk)

Study of the dynamics of multistable elements based on a simplified model. Izv. AN SSSR. Tekh. kib. no.5:156-162 S-O '65. (MIRA 18:11)

L 20665-66 EWT(1)/EWA(h)
ACC NR: AP6004556 SOURCE CODE: UR/0103/66/000/001/0133/0138

AUTHOR: Sigorskiy, V. P. (Kiev); Sitnikov, L. S. (Kiev); Utyakov, L. L. (Kiev)

ORG: none

TITLE: Chronotrons; time-pulsed multistable elements

SOURCE: Avtomatika i telemekhanika, no. 1, 1966, 133-138

TOPIC TAGS: pulse generator, pulse modulation, pulse rate, chronotron

ABSTRACT: It was shown earlier by the authors that a chronotron may be designed by incorporating a four-terminal network in a feedback loop. One of the common versions of such a four-terminal network is shown in Fig. 1.

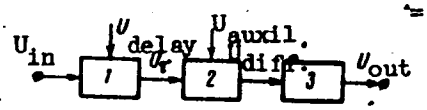

Fig. 1. An all-purpose four-terminal network.
1 - controlled delay; 2 - switching block;
3 - averaging filter.

Card 1/2

L 20665-66
ACC NR: AP6004556

The authors investigate this and other versions of multistable elements which are characterized by their d-c output voltage and the duration of the square wave pulses. The paper contains a brief outline of the theory, block diagrams of the elements, graphs of the voltages, and a circuit diagram. The control of such an element, i.e., the shift of its operation from one steady state to another is carried out by switching the circuit briefly from the univibrator output to an external source of pulses having the required duration. Orig. art. has: 6 formulas, 8 figures, and 1 table. [08]

SUB CODE: 09 / SUBM DATE: 19May65 / ORIG REF: 003/ ATD PRESS: 4223

Card 2/2 BK

L 25652-66

ACC NR: AM6011869 Monograph UR/

Sigorskiy, Vitaliy Petrovich; Sitnikov, Leonid Semenovich; Utyakov, Lev Lazarevich

Circuits with many stable states. (Skhemy s mnogimi ustoychivymi sostoyaniyami) Novosibirsk, Redizdat Sib. otd. AN SSSR, 1965. 140 p. illus., biblio. (At head of title: Akademiya nauk SSSR. Sibirskoye otdeleniye) 1000 copies printed.

TOPIC TAGS: computer application, computer design, computer research, computer technology

PURPOSE AND COVERAGE: This book is intended for scientific and technical personnel concerned with computers, automation, simulation of processes in the nervous systems of living organisms, and other fields in which circuits with many stable states may find application. The book contains the main results of theoretical and experimental investigations concerned with finding new principles for developing such circuits. The possibility of developing elements with many stable states, whose quantity is determined by the operating conditions and the parameters of the circuit (independent of its complexity), is demonstrated. A method for developing such elements, based on the conversion of static and time characteristics into comb- or step-

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type amplitude characteristics, is proposed. Stability is investigated, and the transients of the general block-diagram of an element with many stable states are analyzed, making it possible to evaluate various control methods from the standpoint of fast response and criticality with regard to the controlling-effect parameters. A number of specific circuits, checked under laboratory conditions, is proposed. Harmonic-frequency (spectrotron), time-pulse (chronotron), and pulse-frequency (synchrotron) circuits proved to be the most promising. In laboratory specimens ten or more states of stable equilibrium were easily obtained. In addition to the authors, A. N. Boyko, A. P. Vishnevskiy, A. A. Molchanov, Yu. S. Osyagin, E. Ye. Bartlemanov, V. A. Yelkin, Ya, Sh. Zakirzyanov and A. R. Turuk participated in the research.

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L 25652-66

ACC NR: AM6011889

SUB CODE: 09/ SUBM DATE: 14Jan65/ ORIG REF: 022/ OTH REF: 009

Card 3/3

AÇC NR:AM6015099 Monograph UR

Sigorskiy, Vitaliy Petrovich (Doctor of technical sciences; Professor); Sitnikov, Leonid Semenovich; Utyakov, Lev Lazarevich

High-stability elements in discrete technology (Mnogoustoychivyye elementy diskretnoy tekhniki) Moscow, Izd-vo "Energiya", 1966. 359 p. illus., biblio. 8000 copies printed.

TOPIC TAGS: electronic component, automation equipment, computer design, computer component, computer research, FREQUENCY STABILITY, HARMONIC OSCILLATION

PURPOSE AND COVERAGE: This book is intended for a wide circle of specialists in the fields of automation and computational technology. It discusses the principles of operation and theory and scientific foundations for the planning of a new class of high-stability elements. Dynamic elements, whose conditions are identified by the harmonic-oscillation frequency or by the period, duration, and phase of the periodic pulse sequence, are paid special attention; fields of their application, with reference to interconversion circuits, registers, adders, analog-to-digital converters, and functional generators in particular, are reviewed.

Card 1/4 UDC: 681.142.6

ACC NR: AM6015099

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ACC NR: AM6015099

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SUB CODE: 09/ SUBM DATE: 21Jan66/ ORIG REF: 128/ OTH REF: 041

Card 4/4

L 30400-66 EWT(d)/FSS-2

ACC NR: AP6007864 SOURCE CODE: UR/0103/66/000/002/0076/0081

42
B

AUTHOR: Sigorskiy, V.P. (Kiev); Sitnikov, L.S. (Kiev); Utyakov, L.L. (Kiev)

ORG: none

TITLE: Pulse-frequency multistable components

SOURCE: Avtomatika i telemekhanika, no. 2, 1966, 76-81

TOPIC TAGS: electronic component, stabilizer, RF pulse, frequency stability

ABSTRACT: The present article investigates the means of development and the basic characteristics of multistable components of a group the states of which are distinguished according to the value of the output voltage of the frequency sequence of the pulses generated. For the development of such components use may be made of the nonlinear four-pole component, which includes the converters of voltages into frequency sequences of pulses and frequencies into voltage. It is concluded that when a synchronized controlled relaxation generator is included in a feedback loop with an inertia link there is the possibility of creating sufficiently simple components with many unstable states, distinguished by an oscillation period of the relaxation generator and the magnitude of the control voltage at the output of the discriminator. The magnitude of the state is controlled by altering the frequency of the sequence of synchronization pulses. The advantage of the proposed device is that even with the utilization of the generator with the nonlinear control characteristic its period of oscillation in the transition of the component from any state to a neighboring state changes by a rigidly

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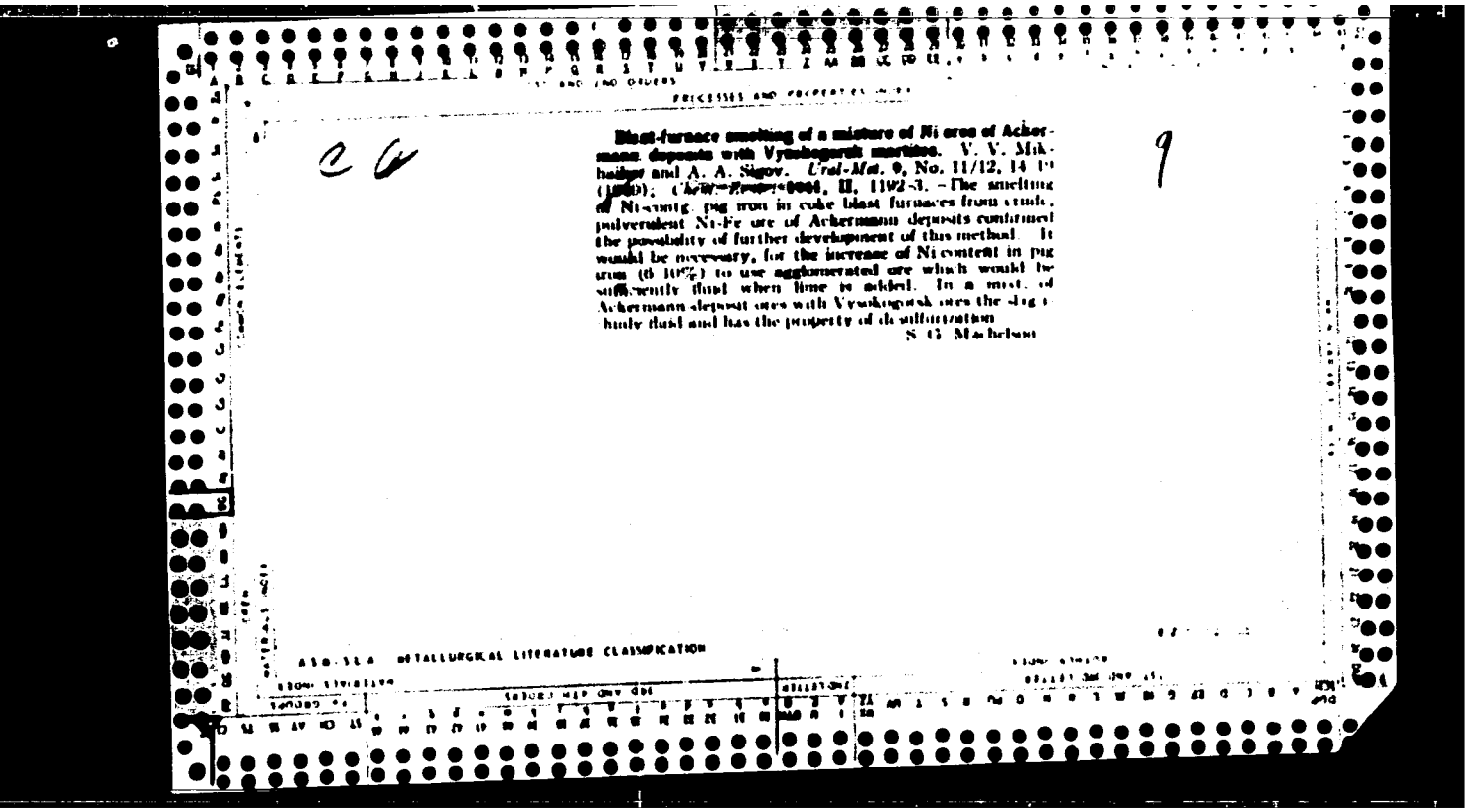
fixed constant equal to the synchronization voltage period. The utilization of the relaxation generator with linear control makes it possible to considerably increase the number of stable states and to assure a constant increment of the control voltage in the transition of one state to another. Orig. art. has: 6 figures, 7 formulas, and 3 tables.

SUB CODE: 09 / SUBM DATE: 01Sep64 / ORIG REF: 002

Card 2/2

SIGOSHIN, V.M., inzh.

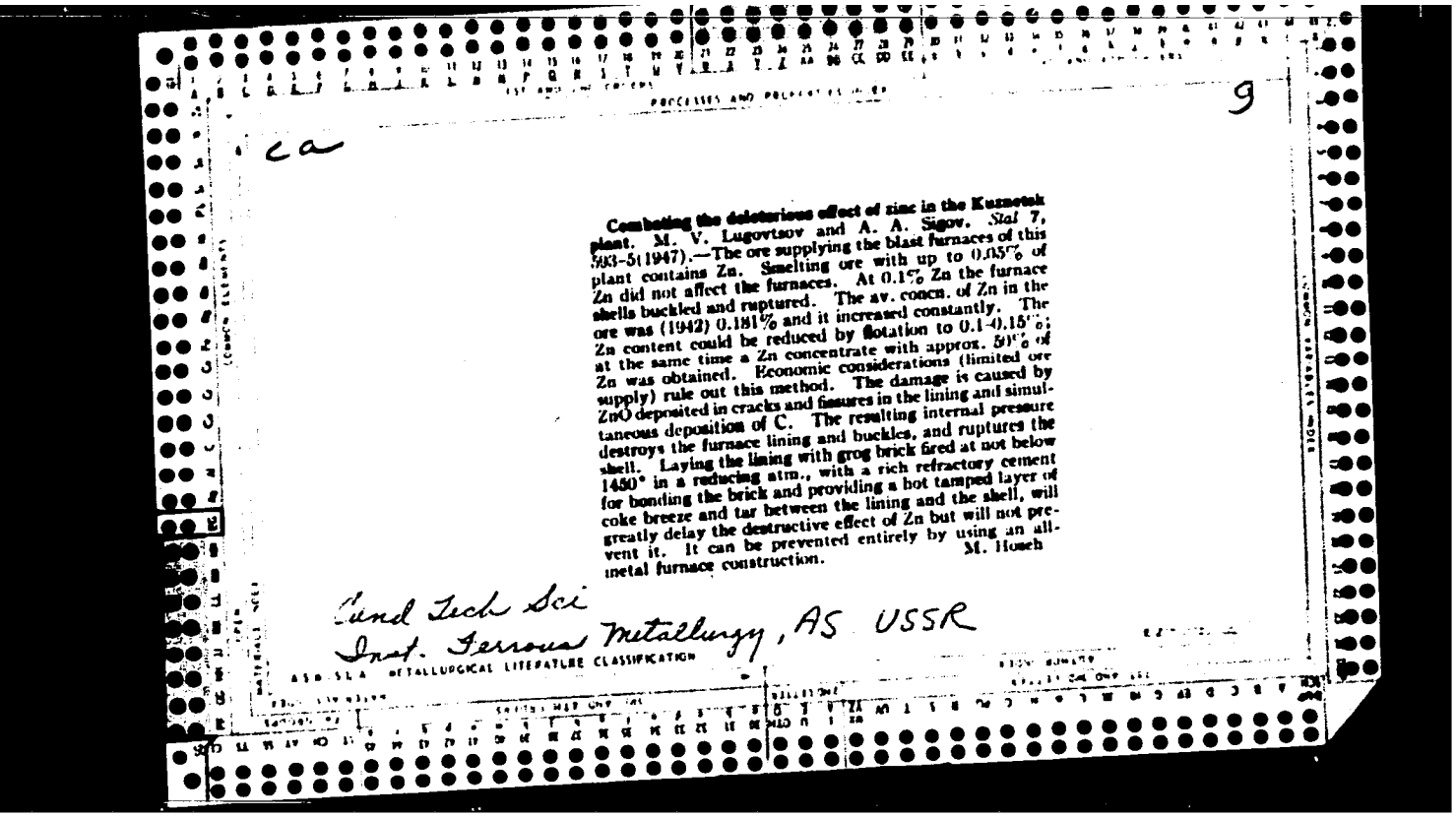
On G.M. Nikolaevskii's article "Standardization of basic parameters of metal cranes." Vest.mash. 40 no.10:41-43 O'60. (MIRA 13:10)
(Cranes, derricks, etc.) (Nikolaevskii, G.M.)



Blast-furnace smelting of a mixture of Ni ores of Achinsk deposits with Vyshegursk martites. V. V. Mikhailov and A. A. Sigov. *Ural-Met.* 9, No. 11/12, 14 [illegible] (1950); *Chem. Zentr.* 1954, II, 1192-3. – The smelting of Ni-containg pig iron in coke blast furnaces from crude, pulverulent Ni-Fe ore of Achinsk deposits confirmed the possibility of further development of this method. It would be necessary, for the increase of Ni content in pig iron (6 10%) to use agglomerated ore which would be sufficiently fluid when lime is added. In a mixt. of Achinsk-deposit ores with Vyshegorsk ores the slag is easily fluid and has the property of desulfurization.

S. G. Mashchenko

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION



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Combating the deleterious effect of zinc in the Kuznetsk plant. M. V. Lugovtsov and A. A. Sigov. *Stal* 7, 583-5(1947).—The ore supplying the blast furnaces of this plant contains Zn. Smelting ore with up to 0.05% of Zn did not affect the furnaces. At 0.1% Zn the furnace shells buckled and ruptured. The av. concn. of Zn in the ore was (1942) 0.181% and it increased constantly. The Zn content could be reduced by flotation to 0.1-0.15%; at the same time a Zn concentrate with approx. 50% of Zn was obtained. Economic considerations (limited ore supply) rule out this method. The damage is caused by ZnO deposited in cracks and fissures in the lining and simultaneous deposition of C. The resulting internal pressure destroys the furnace lining and buckles, and ruptures the shell. Laying the lining with grog brick fired at not below 1450° in a reducing atm., with a rich refractory cement for bonding the brick and providing a hot tamped layer of coke breeze and tar between the lining and the shell, will greatly delay the destructive effect of Zn but will not prevent it. It can be prevented entirely by using an all-metal furnace construction. M. Hoseh

Cand Tech Sci
Inst. Ferrous Metallurgy, AS USSR

ASD SLA METALLURGICAL LITERATURE CLASSIFICATION

LUGOVTSOV, M.V.; SIGOV, A.A., kandidat tekhnicheskikh nauk; KOTOV, I.K.

Sinter production with manganese ore and its smelting in a blast furnace. Trudy Inst. chern. met. AN URSR 3:3-24 '49. (MLRA 8:7)

1. Deystvitel'nyy chlen Akademii nauk URSR. (for Lugovtsov, M.V.)
2. Nachal'nik domennogo tsekha zavoda imeni Kirova. (for Kotov, I.K.)
(Iron manganese alloys) (Smelting)

LUGOVTSOV, M.V.; SIGOV, A.A.

Chalk-fluxed sinter. Trudy Inst. chern. met. AN URSR 6:3-25 '53.
(Sintering) (Flux (Metallurgy)) (MIRA 11:4)

Sigov, A.A.

4

Chalk-fluxed agglomerate. M. V. Lugovtsov and A. A. Sigov. *Trudy Inst. Chernoi Met., Akad. Nauk Ukr. S.S.R.* 6, 3–5(1953); *Referat. Zhur. Khim.* 1954, No. 27820.—The technological properties of chalk as a fluxing agent for agglomerated ore were studied. It was found that addn. of chalk to a charge of ore hastens agglomeration. With 6% of coke breeze the time of sintering was reduced from 24 min. without chalk to 11.5–8.2 min. with 3–10% of chalk. The yield of suitable agglomerated ore was high and the efficiency of sintering was constantly increasing. Increasing slightly the amt. of fuel raised the strength of the agglomerate, e.g. by using 3% of chalk and raising the amt. of fuel by 6%, the fractions 0–5 and 0–2 decreased from 32.5 and 10.9% to 25.5 and 12.5%, resp. Increasing the amt. of chalk in the charge lowered the FeO content in the agglomerate. In sintering chalk agglomerates, the increase in the amt. of coke did not entail a sharp increase in the time of sintering. Chalk also markedly improved the ability of Krivoi Rog ores to nodulize, and rendered the nodulized particles stronger, and thereby less susceptible to crumbling in drying and wetting of the charge. The strengthening properties of small addns. of chalk are particularly noticeable with low-grade ores. This is attributed to more ready formation of Ca silicates in ores contg. high amts. of SiO_2. CaO intensifies sintering more than chalk does but because of its higher cost and difficulties of transport and storage it cannot be used in production. The intensifying action of limestone is analogous to the action of chalk but limestone agglomerates are less strong and more apt to crumble which necessitates grinding of the limestone. M. Hosch

Sigov A.A. 136-11-7/17

AUTHORS: Dobrokhotov, N.N. Academician and Sigov, A.A., Candidate of Technical Sciences

TITLE: Reducing Technology for Treating Oxidised Nickel Ores (Vosstanovitel'naya tekhnologiya pererabotki okislennykh nikelevykh rud)

PERIODICAL: Tsvetnyye Metally, 1957, No.11, pp. 36 - 40 (USSR).

ABSTRACT: Discoveries in the Ukraine of considerable reserves of oxidised nickel ores have stimulated research into ways of reducing the nickel to the metallic state under conditions minimising the reduction of iron. Laboratory studies in 1950 at the Kiev Polytechnic (Kiyevskiy politekhnicheskiy institut) were followed by tests in an open-hearth furnace at the "Bol'shevik" Works at the same town when an alloy containing 25.4 - 26.5% Ni and 0.8-0.9% Co with 79.6 - 83.7% recovery. In 1952, one of the authors (Dobrokhotov) directed full-scale tests with dry ore containing 1.5% Ni and 36.9% Fe which was formed into acid and basic briquettes and +10 mm fraction and smelted in an open-hearth furnace. Details of results obtained are given in this article with special attention to the relative extents of nickel and iron reduction in relation to operating factors. Best results were obtained with basic briquettes (8 - 8.5% reducing agent in the briquetting mix) and

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Smelting Technology for Treating Oxidised Nickel Ores 136-11-7/17

this technology was tested in 1953 by the Ukrainian Institute of Metals (Ukrainskiy institut metallov) on a small open-hearth furnace of the imeni Karl Libknekht (imeni Karla Libknekhta) Works in Dnepropetrovsk. Since cobalt has little value in ferro-nickel, the authors recommend research to find ways of extracting this element from the alloy. They conclude that on the basis of blast furnace nickel, pig iron and the open-hearth ferro-nickel they secure, all types of alloy nickel steels can be produced, the cost of nickel in ferro-nickel being lower than that of metallic nickel obtained from oxide ores by sulphide smelting. There are 4 figures and 1 table.

ASSOCIATION: Akademiya nauk USSR. (Academy of Sciences of the Ukrainian SSR)

AVAILABLE: Library of Congress

Card 2/2

1. Iron-Reduction 2. Nickel-Reduction

SOV/137-58-7-14060

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 11 (USSR)

AUTHORS: Sigov, A. A., Red'ko, Yu. I.

TITLE: Sintering of Krivoy Rog Ores With Various Amounts of Air Suction (Aglomeratsiya krivorozhskikh rud pri razlichnom kolichestve prosasyvayemogo vozdukha)

PERIODICAL: Izv. Kiyevsk. politekhn. in-ta, 1957, Vol 20, pp 209-227

ABSTRACT: Sintering is performed on a sintering machine, a diagram of which is adduced. The function of suction fan (F) is performed by a powerful aircraft supercharger with which the amount of suction air can be regulated within wide limits. In the first series of experiments, the F functioned at normal rpm and a vacuum of 580-630 mm water. In the second series of experiments, the vacuum was 1150 mm water, and a considerably larger amount of air was sucked through the charge. Sintering was also performed at ~1600 mm water vacuum. The concepts hitherto existing as to the excess air factor α in sintering prove to be excessive. The pores in the Krivoy Rog ores mix show an overall α of 1.4-1.5 during the sintering process as a whole, and more often of 1.21. The total amount of air sucked through

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Sintering of Krivoy Rog Ores with Various Amounts of Air Suction

by the F is significantly increased by parasite air taken in from various sources (40-50% of the total quantity of gases). The total excess air for the period from the start of the process to the moment of maximum temperature increase in the waste gases is ~2.7-3.0, and is practically independent of the amount of air taken in per min and the magnitude of the initial vacuum. α varies markedly during the sintering process, attaining a maximum at the end of the process as the C residue burns to completion at the bed. The increase in F power makes for a corresponding increase in the rate at which the zone of combustion moves down, i.e., shortens the duration of the process. The downward motion of the zone of carbon combustion is directly proportional to the amount of air sucked through per min.

A. Sh.

1. Ores--Sintering 2. Sintering furnaces--Operation 3. Supercharges --Applications

Card 2/2

137-58-6-11352

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 14 (USSR)

AUTHOR: Sigov, A.A.

TITLE: Capacity of Sintering Machines Employing Fluxed Agglomerate (O proizvoditel'nosti aglomashin pri rabote na oflyusovannyy aglomerate)

PERIODICAL: Izv. Kiyevsk. politekhn. in-ta, 1957, Vol 20, pp 228-242

ABSTRACT: A table is presented of the calculated output of a machine for the sintering of charges containing 0-25% chalk. Industrial production of fluxed agglomerate (FA) reveals significant deviations from the data presented in the table. On conversion to the production of FA there occurs, on the one hand, a reduction in the volumetric weight of the charge and the yield of good agglomerate, and on the other hand an increase in the downward motion of the burning zone (DMBZ). On addition of 10-15% chalk (or limestone), the effect of an increase in DMBZ under laboratory conditions was found to be greater than the factors which tend to reduce the capacity of the installation. Addition of 20-25% fluxing substances creates the opposite situation, whereupon the output, measured in terms of agglomerate,

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137-58-6-11352

Capacity of Sintering Machines Employing Fluxed Agglomerate

inevitably declines (even more so in terms of ore sintered). In shop conditions it is not possible, with suction fans of the present capacity and the large amount of foreign matter sucked off the sintering belt, to attain the degree of DMBZ of fluxed mixes attainable in laboratory experiments. Reduction in the amount of foreign matter sucked down is the simplest method of increasing the DMBZ on the belt of charges with added chalk or limestone. The use of a suction fan of 30-40% greater capacity may prove to be a significant measure. Intensive firing is desirable to attain high output and produce a solid FA. Firing should be by a mixture of blast-furnace and coke-oven gas (up to 25-35% coke-oven gas).

A.Sh.

1. Sintering furnaces--Performance

Card 2/2

DOBROKHOTOV, N.N., akademik; SIGOV, A.A., kand. tekhn. nauk.

Reduction treatment of oxidized nickel ores. TSvet. met. 30 no.11: 36-40 N '57. (MLRA 10:11)

1. AN USSR.
(Nickel--Metallurgy) (Reduction, Chemical)

SIGOV, A.A., kand.tekhn.nauk, dots.

Dissociation of calcium carbonate during sintering. Izv. vys. ucheb. zav.; chern. met. no.3:3-12 Mr '58. (MIRA 11:5)

1.Kiyevskiy politekhnicheskiy institut.
(Sintering) (Calcium carbonate)

SIGOV, A.A., dots., kand.tekhn.nauk

Redistribution of moisture during iron ore sintering. Izv.vys. ucheb.zav.; chern.met. no.8:7-12 Ag '58. (MIRA 11:11)

1. Kiyevskiy politekhnicheskiy institut.
(Sintering)